

Air Quality – Outcome-Based Performance Objectives Mitigation and Monitoring

As stated in the Jonah Infill Drilling Project Final Environmental Impact Statement, “The following actions could further identify, quantify, and reduce overall project emissions, which in turn could reduce impacts to visibility, atmospheric deposition...potentially affected by fugitive dust and emissions”.

- **Air Quality Goal 1a: Minimize the impact of management actions in the planning area on air quality by complying with all applicable air quality laws, rules, and regulations.**

Concentrations of criteria and PSD pollutants

Air quality objective 1a.1: Maintain concentrations of criteria pollutants associated with management actions in compliance with applicable Wyoming and National Ambient Air Quality Standards (WAAQS and NAAQS).

- Emissions tracking
 - ***Record of Decision Commitment 2.*** *The BLM will work cooperatively with state and other federal agencies, and with industry, to track emissions in the Pinedale Field Office area.*
 - WDEQ has provided to BLM southwest Wyoming emissions tracking reports beginning in July 1997 with the most recent submission occurring in December 2005. The reports fulfill the WDEQ responsibilities per the original and amended Letter of Agreement for Tracking Nitrogen Oxide Emissions.
 - BLM has provided the public and WDEQ with spreadsheets regarding on-going tracking efforts (PAWG meeting 9/26/2006). It is suggested that BLM re-visit the Letter of Agreement to fulfill the requirements in on-going tracking efforts.
 - Actual emissions inventories tracking emissions was conducted by the WDEQ (in conjunction with industry) for the Jonah Infill Drilling Project (JIDP) and have been completed for years 2004 and 2005. An actual 2006 emissions inventory request is anticipated for the JIDP.
 - Operators are required to provide the Jonah Interagency Office (JIO) with drill rig emissions reports within ten days of completion. WDEQ currently assesses these reports and will be discussing results and strategy amongst the agency and BLM.

Items for consideration

- 1) The emissions inventories will be communicated annually.
- 2) The drilling rig emissions data will be available after March 2007.
- 3) Data - emissions tracking and inventories

- a. It is predicted that the tracking exercises will show decreases in actual emissions of some pollutants over the life of the JIDP due to advancements in technologies (drilling rig engines, tanks, dehydration units, pneumatic pumps, etc.)
- b. The assessed data will enable WDEQ to make pro-active decisions, which will support the accomplishment of air quality objective 1a.1.

○ Concentrations

- **Record of Decision Commitment 5.** *BLM will continue to work cooperatively with WDEQ, EPA, USFS, and NPS to maintain and enhance concentration, atmospheric deposition, and visibility monitoring in the Pinedale Field Office Area.*
 - Ambient air quality data may be viewed on-line at www.wyvisnet.com for the air quality stations. The Wyoming Visibility Monitoring Network Website features live images and current air quality conditions from monitoring locations throughout the state. Digital images from live sites are updated every 15 minutes. In addition, near real-time air quality data provide current meteorological, air quality and visibility information.
 - An update regarding additional ambient air quality monitoring sites as well as other sites that measure different parameters was provided to PAWG 9/26/2006. A summary of the “Monitoring Plan for the Pinedale Anticline Oil and Gas Exploration and Development Project” outlining the air quality monitoring network follows:

Location	Name	Monitored Pollutants	Visibility	Deposition
Pinedale	State and Local Air Monitoring Stations (SLAMS)	PM _{2.5}		
Daniel South, Boulder, and Jonah	Special Purpose Monitors (SPM)	NO ₂ , O ₃ , PM ₁₀	√	
Pinedale	Clean Air Status and Trends Network (CASTNet)	Nitrogen & sulfur compounds, ozone		√
Pinedale	Wyoming Air Resources Monitoring System (WARMS)	Nitrogen & sulfur compounds, PM _{2.5}		
Bridger-Teton National Forest	National Atmospheric Deposition Programs (NADP)/bulk deposition	Nitrogen & sulfur compounds		√

Bridger & Fitzpatrick Wilderness Areas – Long-Term Lakes	Lake Chemistry	Nitrogen & sulfur compounds		✓
Pinedale	IMPROVE	Visibility impairing aerosols, light extinction	✓	

Items for consideration

- 1) The SLAMs and SPMs' data are available upon request.
- 2) The assessed data will enable WDEQ to make pro-active decisions, which support the accomplishment of air quality objective 1a.1.
 - a. PM_{2.5} - the BLM has implemented and is coordinating an adaptive management process through the JIO. Explicitly set forth as an adaptive management goal is the revision of models and projections based on monitored data. This approach allows the WDEQ to monitor PM_{2.5} data and to timely assess, revise or implement modifications to Wyoming's air quality program, assuring continued PM_{2.5} compliance with ambient air quality standards.
 - b. Assessment of this data paired with emissions inventories will allow WDEQ to determine if there is a need for additional monitors (e.g. HAPs, VOCs, PM_{2.5}, etc.) and/or air quality monitoring stations.
- 3) Upper air meteorological data has been shown to be lacking, indicating the need for better meteorological data for modeling purposes.
- 4) Current evaluation of ambient air monitoring data has allowed WDEQ to develop a study for ozone (see below):
 - **Record of Decision Commitment 4.** *In cooperation with the JIO established under the ROD, BLM will review ozone data collected in the area. If in the future air monitoring were to show ozone exceedances attributable at least in part to sources in the Jonah field, BLM will consult with WDEQ, EPA, USFS, and NPS to determine whether adaptive management would be needed to mitigate impacts.*
 - WDEQ issued Requests for Proposal (RFPs) for a study entitled "Further Evaluation of Ozone Formation in the Upper Green River Basin" in October and November 2006 to investigate elevated ozone concentrations that occurred in the winters of 2005 and 2006. The study will include an emission inventory, ambient monitoring, field observations of meteorology and modeling.
 - WDEQ's overarching objective is to understand previous elevated ozone events and gather additional information,

which will form the basis for the development of a strategy to manage ozone formation in the Upper Green River Basin.

- BACT (Best Available Control Technology)
 - WDEQ is currently revising the Oil and Gas BACT guidelines and has proposed making the JIPD more restrictive in regards to:
 - When control devices are to be placed on production equipment (dehydrators, tanks, etc.)
 - Allowable emissions levels
 - Pneumatic pump emissions control
- Compliance
 - A WDEQ representative is to conduct at least twenty field inspections per month on production equipment to verify compliance with rules, laws, and regulations.

Air quality objective 1a.2: Maintain specific concentrations of PSD pollutants associated with management actions in compliance with the applicable increment

- “Summary Report of the Southwest Wyoming NO₂ PSD Increment Consumption Modeling: Results for Sublette County”, September 15, 2005, states:

Nearly all of the maximum Class II increment consumption of 11.5 µg/m³ is due to the increase in oil and gas source emissions from the JIPD. Similarly, the increase the JIPD emissions accounts for nearly three quarters (71%) of the maximum Class I increment of 0.14 µg/m³ with nearly all of the remainder due to growth in other oil and gas sources and point sources. Small negative increments results from decreases in on-road mobile and other area source emissions.

	Increment Consumed (µg/m ³)	Maximum PSD Allowance (µg/m ³)
Class I	0.14	2.5
Class II	11.50	25.0

Items for consideration

- 1) These reports will be available as additional reports are finalized by WDEQ. The 2005 report is available online through the WDEQ web site.
- 2) Current mitigation measures are being developed that should prevent complete consumption of the allowable NO_x increment (stationary source BACT review, drilling rig best available technology [BAT]).
- 3) If a trend is seen in the emissions inventories, it may trigger an increment consumption analysis for other air quality parameters (i.e. SO₂ and PM). It is not foreseen, however, at this time.

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- **Air Quality Goal 1b: Implement management action in the planning area to improve air quality as practicable**

Visibility and Atmospheric Deposition

Air quality objective 1b.1: Reduce visibility-impairing pollutants [specifically SO₂, NO_x, PM₁₀ and PM_{2.5}], in accordance with the reasonable progress goals and time-frames established within the State of Wyoming's Regional Haze State

Implementation Plan (SIP)

- Wyoming's Regional Haze Section 309 SIP was submitted in December 2003. It is planned to be amended and resubmitted, and supplemented with a Regional Haze Section 308 SIP in December 2007, which will address emissions from point, area and mobile sources. Oil and gas emissions will be incorporated in the area source category. Regional haze is extensively addressed in the JIDP Final Environmental Impact Statement and the Final Air Quality Technical Support Document for the JIDP EIS.
- Drilling rig emissions
 - ***Record of Decision Commitment 3.*** Operators will demonstrate by January 31 each year that emissions reductions from the JIDPA will reduce the potential impact to visibility as follows:
 - ***Demonstration Period***
 - Three demonstration plans were submitted by Encana, BP, and Ultra to the WDEQ. The WDEQ felt more testing was warranted (communicated to the companies 10/4/2006). The attached table demonstrates the technologies available and to be tested by the various companies.
 - ***Implementation Period***
 - The implementation period will be undertaken after WDEQ establishes Best Available Technology (BAT) standards.
 - In the absence of WDEQ-established BAT standards, the Operators will submit annual operating plans that report the emissions from all emitting units in order to demonstrate that the potential visibility impact from the proposed project will be less than the potential visibility impact levels of the 80% emission reduction scenario described in the FEIS and to demonstrate that any potential visibility impact decreases as soon as possible to no days with an impact greater than or equal to 1 deciview (dv).

- **Record of Decision Commitment 1.** *Tier II or equivalent diesel engine emission technologies will be required for all drill rigs at the earliest date possible.*
 - Encana's drill rig fleet – Encana is planning 16 drill rigs for the 2007 drilling season. Two rigs equipped with natural gas engines are currently being used in the field, five more rigs equipped with natural gas engines are scheduled to be delivered prior to year end 2006, and nine more rigs equipped with natural gas engines are scheduled for delivery in 2007, with the final delivery by October 2007 (communicated 9/11/2006).
 - BP's drill rig fleet – BP is currently using 2 drill rigs equipped with various Tier 0 and Tier I engines. BP is planning to continue to use 2 drilling rig engines and change the engines to Tier II by third quarter 2007 (communicated 10/4/2006).
 - Ultra's drill rig fleet – Ultra intends to utilize four rigs for the 2007 drill rig season. One of the drill rigs will be equipped with Tier II engines by early 2007. Ultra will be operating three drill rigs equipped with Tier I engines and plans to convert these Tier I engines to Tier II engines before 3/1/2009 (communicated 9/27/2006).

Air quality objective 1b.2: Reduce atmospheric deposition pollutants to levels below federally established Levels of Concern (LOC) and Levels of Acceptable Change (LAC).

- Lake monitoring
 - In a report titled “Wind River Bulk Deposition Program Bridger-Teton National Forest Summary of 2005 Data” published in July 2006 by the United States Forest Service (USFS), it concluded:

“At both sites sulfate and nitrate deposition increased substantially from the previous year. At Hobbs Lake, nitrate deposition increased 65% and sulfate deposition increased by 132%. At Black Joe Lake, nitrate increased 45% and sulfates increased 81%.”

The following tables summarize the deposition data from the aforementioned report:

Hobbs Lake Annual Deposition (kg/hectare/yr)

<i>Year</i>	<i>Sulfate</i>	<i>Nitrate</i>
2001	5.39	8.12
2002	5.24	6.83
2003	4.29	6.34
2004	3.09	5.67
2005	7.20	9.36

Black Joe Lake Annual Deposition (kg/hectare/yr)

<i>Year</i>	<i>Sulfate</i>	<i>Nitrate</i>
2001	4.51	6.94
2002	4.87	6.67
2003	5.26	7.64
2004	4.113	6.50
2005	7.462	9.44

Items for consideration

- 1) WDEQ will continue to review depositional data produced by the USFS and will improve our understanding of impacts in regards to atmospheric deposition.